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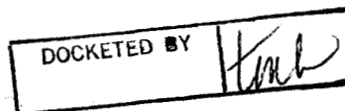
July 27, 1998

RE-000000C-94-0165

The Honorable Carl J Kunasek
Arizona Corporation Commission
1200 W Washington
Phoenix, AZ 85007Arizona Corporation Commission
DOCKETED

JUL 29 1998

Dear Commissioner Kunasek,



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I have enclosed some information that you have requested regarding the cost comparison between solar thermal water heating and photovoltaics. Sorry for the delay, but I wanted to have as accurate a comparison as possible done for you. This chart was done by Les Nelson of the Solar Energy Industries Association and Tim Merrigan of Energy Information Services in Franktown, Colorado. Mr. Merigan is an energy consultant who has worked in the solar industry for some time.

As you know, the Solar Energy Industries Association supports the inclusion of solar water heating in the Solar Portfolio Standard. We fully support your efforts to include solar thermal water heating in the Solar Portfolio Standard and will work towards obtaining support for your amendment from Commissioners Irvin and Jennings.

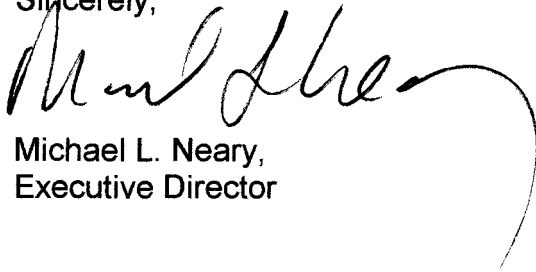
Due to the concerns of those who feel that solar thermal will take up the entire portfolio, we have developed a compromise position that would allow up to thirty percent of the portfolio standard to be met by solar thermal water heating. That may help gain the support of the other Commissioners.

A Chapter of the National Solar Energy Industries Association.

The chart that I am providing considers a residential application of solar DHW system vs. a photovoltaic system. It should give you a good comparison of the two technologies.

I look forward to working with you to obtain passage of your amendment. If you have any questions, please feel free to call. Thank you for your efforts on our behalf.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael L. Neary", with a long, sweeping horizontal flourish extending to the right.

Michael L. Neary,
Executive Director

**COMPARISON OF A SOLAR WATER HEATING SYSTEM
TO AN EQUIVALENT SOLAR PHOTOVOLTAIC SYSTEM
IN PHOENIX, ARIZONA**

	Solar Water Heating System	Solar Photovoltaic System
Collector/PV Module Model	Radco 408C-HP	Solarex MST-56
Collector/PV Module Area	32.3 sq.ft.	8.8 sq.ft.
Panel Power Output (@ STC ¹)	2000 W _p ²	56 W _p ¹
Power Conversion Efficiency	67% ²	7% ¹
No. of Panels in 2 kW _p System	1	36
Roof Area in 2 kW _p System	33 sq.ft.	360 sq.ft.
System Power Output (@ STC ¹)	2.0 kW _p ²	2.0 kW _p ¹
Annual Energy Output	2850 kWh ³	3400 kWh ⁴
Installed System Cost	~\$2,000	~\$9,600
Installed System Cost per Watt	~\$1.00/W _p	~\$4.80/W _p
Installed Cost per kWh (10 yr) ⁵	~\$0.07/kWh	~\$0.28/kWh

¹ Standard Test Conditions: 1000 Watts/m² Irradiance (Air Mass 1.5), 25 C Cell Temperature

² Watts (peak) at 1000 Watts/m² Irradiance, 25 C Ambient Temperature, 50 C Inlet Water Temperature (based on Florida Solar Energy Center (FSEC) Intermediate Temperature Rating conditions)

³ F-Chart calculation for indirect system in Phoenix with 70 gallons of daily hot water use (at 60 C) and collector tilt equals latitude.

⁴ Solarex literature for the Solar Energizer system in Phoenix with a 2.2 kW inverter.

⁵ Installed system cost divided by 10 years of the annual energy output of the system.